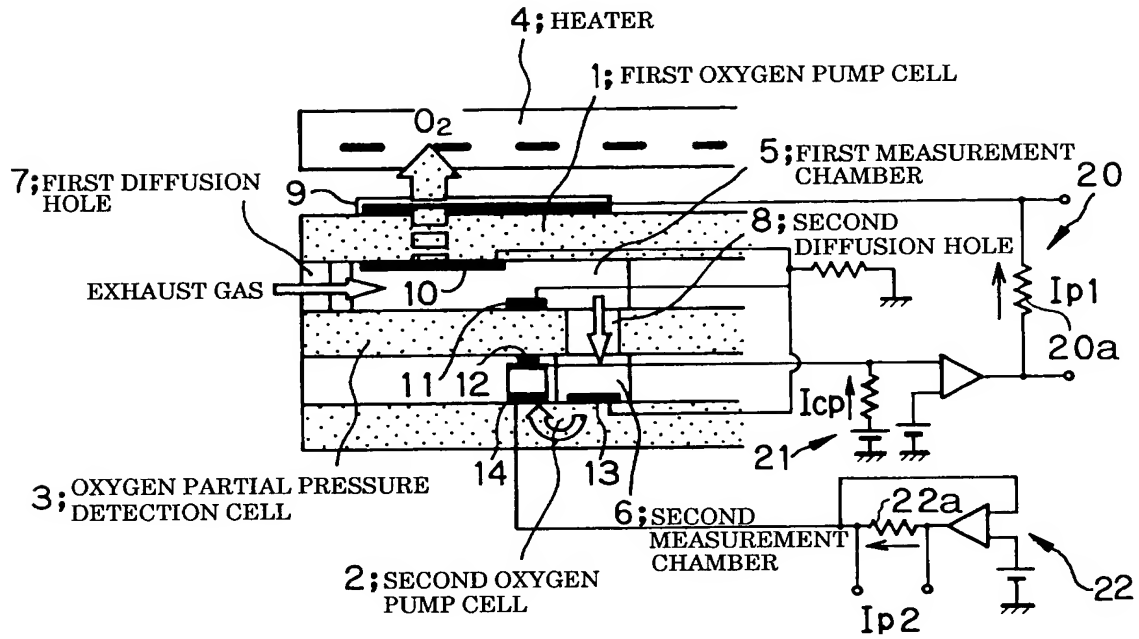
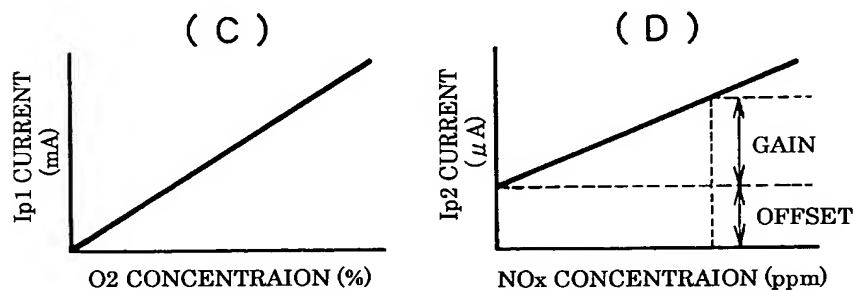


**FIG. 1(A)**



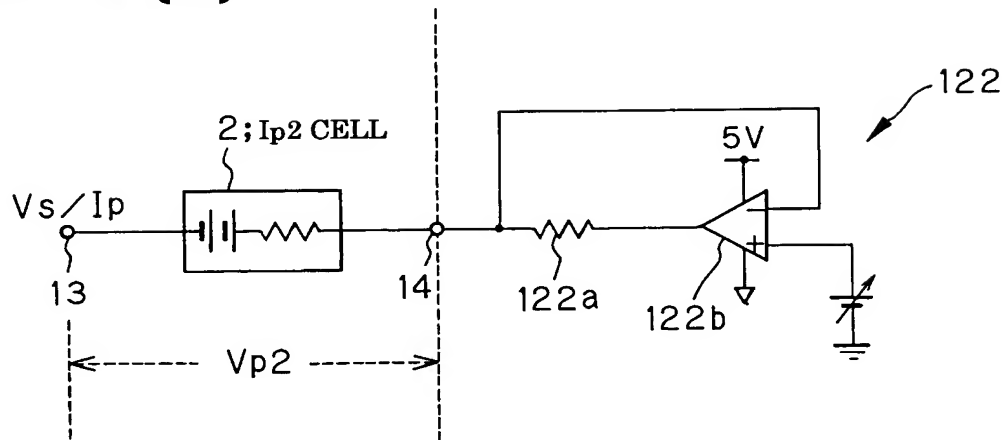
## FIG. 1(B)

- 1) EXHAUST GAS ENTERS THE FIRST MEASUREMENT CHAMBER THROUGH THE FIRST DIFFUSION HOLE.
- 2) OXYGEN WITHIN EXHAUST GAS IS PUMPED OUT BY THE FIRST OXYGEN PUMP CELL. AT THAT TIME, THE OXYGEN PARTIAL PRESSURE WITHIN THE FIRST MEASUREMENT CHAMBER IS CONTROLLED BY A SIGNAL FROM THE OXYGEN PARTIAL PRESSURE DETECTION CELL.
- 3) AFTER HAVING BEEN CONTROLLED IN THE FIRST MEASUREMENT CHAMBER TO CONSTANT OXYGEN PARTIAL PRESSURE, EXHAUST GAS ENTERS THE SECOND MEASUREMENT CHAMBER THROUGH THE SECOND DIFFUSION HOLE.
- 4) NO<sub>x</sub> IN THE SECOND MEASUREMENT CHAMBER IS DECOMPOSED TO N<sub>2</sub> AND O<sub>2</sub>, AND OXYGEN IS PUMPED OUT BY THE SECOND OXYGEN PUMP CELL.
- 5) AT THAT TIME, PUMP CURRENT  $I_{p2}$  FLOWS IN PROPORTION TO NO<sub>x</sub> CONCENTRATION OF EXHAUST GAS.

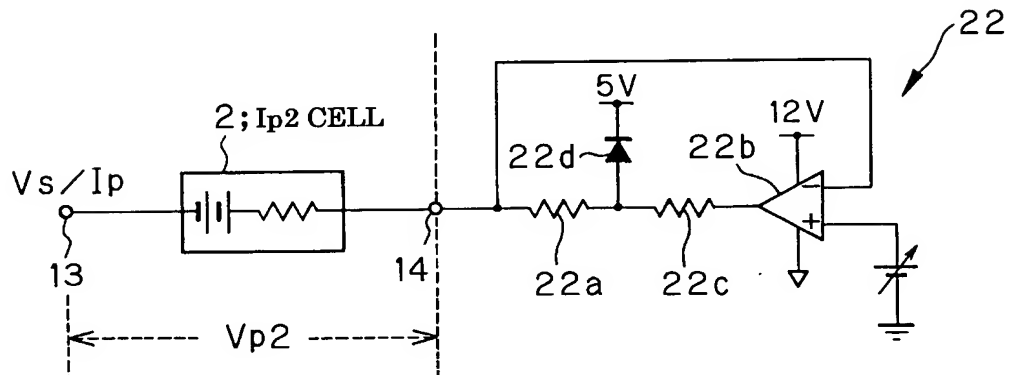




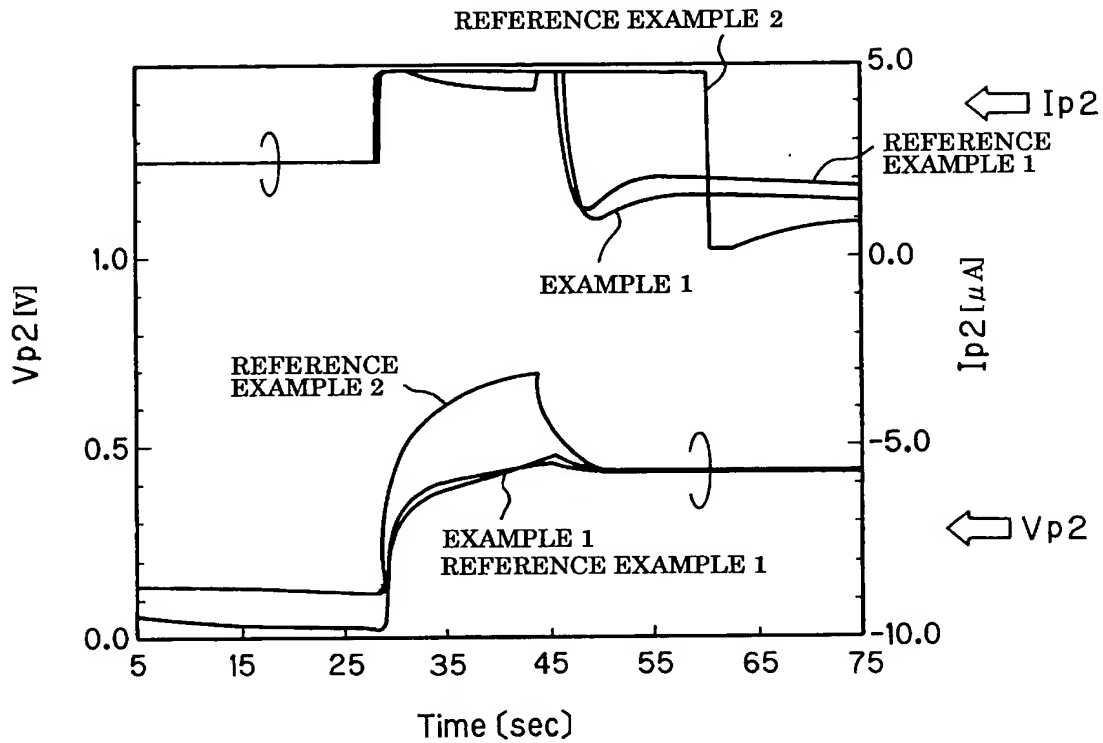
**FIG. 3 (A)**



**FIG. 3 (B)**



**FIG. 4**



RESULTS OF COMPARISON OF  $I_{p2}$  AND  $V_{p2}$  WAVEFORMS